Claims

1. A method of detaching a nucleic acid molecule from a solid support to which it is attached, wherein an unconventional nucleotide is incorporated at a pre-determined site in said nucleic acid molecule, said method comprising selectively cleaving said nucleic acid molecule at the site of said unconventional nucleotide, wherein said selective cleavage is accomplished enzymically.

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2. A method of reversibly immobilising a nucleic acid molecule, said method comprising:

(a) incorporating an unconventional nucleotide into said nucleic acid molecule at a pre-determined site;

(b) binding said nucleic acid molecule to a solid support; steps (a) and (b) being carried out in either order or simultaneously and subsequently

(c) selectively cleaving said nucleic acid molecule at the site of said unconventional nucleotide, wherein said selective cleavage is accomplished enzymically.

3. A method as claimed in claim 1 or claim 2 wherein said nucleic acid molecule is a chimeric molecule comprising a nucleic acid component and another non-nucleic acid component.

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4. A method as claimed in any one of claims 1 to 3, wherein the unconventional nucleotide is uracil, hypoxanthine, a ribonucleotide, N-7 methylguanine, 8-oxoguanine, deoxyuridine, deoxyinosine, deoxy 5,6-dihydroxythimine, 5'6'-dihydroxythine, deoxy 3'-methyladenosine or 3'-methyladenosine.

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5. A method as claimed in any one of claims 1 to 4, wherein said selective cleavage is achieved using a DNA glycosylase enzyme.

6. A method as claimed in any one of claims 1 to 5, wherein said nucleic acid molecule comprises DNA, said unconventional nucleotide is uracil (U), and selective cleavage is achieved using a uracil DNA glycosylase enzyme (UDG).

7. A method as claimed in any one of claims 1 to 6, wherein said unconventional nucleotide is incorporated into said nucleic acid molecule as part of a linker sequence.

8. A method as claimed in claim 7 wherein said linker sequence is a primer.

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9. A method as claimed in any one of claims 1 to 8, wherein said nucleic acid molecule is a primer extension product.

10. A method as claimed in any one of claims 1 to 9, wherein said support is a magnetic bead.

11. A method as claimed in any one of claims 7 to 10, wherein said linker sequence is provided with means for immobilisation to a solid support.

12. A method as claimed in any one of claims 9 to 11, wherein said nucleic acid molecule is a cDNA, or a product of an *in vitro* amplification reaction or a sequencing reaction.

13. A method as claimed in any one of claims 7, 10 or 11, wherein said nucleic acid molecule comprises a linker sequence coupled to a protein, an enzyme

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substrate, a receptor ligand, an antigen or hapten, or a fragment thereof, or to an affinity binding group or a reporter group.

14. A method of preparing a construct for binding to, and subsequent cleavage from, a solid support, said method comprising incorporating into said construct a nucleotide linker sequence comprising at a pre-determined site an unconventional nucleotide capable of selective cleavage using an enzyme.

15. A chimeric molecule comprising a nucleotide linker sequence comprising at a pre-determined site an unconventional nucleotide capable of selective cleavage using an enzyme, coupled to a functional group.

16. A chimeric molecule as claimed in claim 15, wherein said functional group is an affinity binding group or a reporter group.

17. A method as claimed in claim 14, or a chimeric molecule as claimed in claim 15 or 16, wherein said linker sequence is immobilised or provided with means for immobilisation to a solid support.

18. A chimeric molecule as claimed in any one of claims 15 to 17 wherein said affinity binding group is an antibody or a fragment or derivative thereof, or a hapten.

19. A method for separating a target cell from a sample, said method comprising binding said target cell to a solid support by means of a chimeric molecule comprising a nucleotide linker sequence comprising a selectively cleavable unconventional nucleotide at a pre-determined site, coupled to a functional group, preferably as defined in any one of claims 15 to 18,

wherein said functional group is an affinity binding group which binds specifically to said cell.

20. A method of detaching a nucleic acid molecule from a solid support to which it is attached, wherein an unconventional nucleotide is incorporated at a pre-determined site in said nucleic acid molecule, said method comprising selectively cleaving said nucleic acid molecule at the site of said unconventional nucleotide, or of reversibly immobilising a nucleic acid molecule, said method comprising:

(a) incorporating an unconventional nucleotide into said nucleic acid molecule at a pre-determined site;

(b) binding said nucleic acid molecule to a solid support; steps (a) and (b) being carried out in either order or simultaneously and subsequently

(c) selectively cleaving said nucleic acid molecule at the site of said unconventional nucleotide, preferably as claimed in any one of claims 1 to 13,

or a method as claimed in claim 19,

wherein a multiplicity of different nucleic acid molecules or chimeric molecules comprising a nucleotide linker sequence comprising a selectively cleavable unconventional nucleotide at a pre-determined site, coupled to a functional group, are attached or bound to a solid support, each said different molecule incorporating a different unconventional nucleotide.

21. A kit for use in a method as defined in any one of claims 1 to 13, said kit comprising

(a) means for introducing an unconventional nucleotide into a nucleic acid molecule; and

(b) means for selective cleavage of said unconventional nucleotide, wherein said means is an enzyme.

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22. A poly- or oligonucleotide incorporating an unconventional nucleotide which is selectively cleavable using an enzyme, immobilised on a solid support or carrying means for immobilisation.

23. A poly- or oligonucleotide as claimed in claim 22, being poly- or oligo dU.

24. A poly- or oligonucleotide according to claim 22 being a primer.

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25. A poly- or oligonucleotide as claimed in any one of claims 22 to 24, wherein said means for immobilisation is biotin.

26. A poly- or oligonucleotide as claimed in any one of claims 22 to 24 wherein said solid support comprises magnetic beads.

27. A multiplicity of oligo- or polynucleotides as defined in any one of claims 22 and 24 to 26, wherein each different oligo- or polynucleotide incorporates a different unconventional nucleotide.

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